

**APPENDIX B:  
A COMPARISON OF EXCHANGE OF COMMENTS BETWEEN IDFG  
AND NMFS ON NMFS' PRELIMINARY DRAFT A-FISH  
(DECEMBER 1999)  
AND NMFS SCIENTIFIC ANALYSIS IN THE DRAFT BIOP AND ALL-H  
PAPER (JULY 27, 2000)**

As part of the comprehensive response by the State of Idaho regarding the U.S. Army Corps of Engineers Draft Lower Snake River Juvenile Salmon Migration Feasibility Report/Environmental Impact Statement (DEIS) (December 1999), the Idaho Department of Fish and Game (IDFG) commented on the Appendix A. Appendix A was the Anadromous Fish Appendix (Draft A-Fish) of the DEIS, which was prepared by NMFS. Attachment A of the IDFG comments (April 29, 2000) included several on-going technical problems that IDFG had with NMFS assumptions and analyses from the Preliminary Draft A-Fish (April 1999), NMFS response to some of the IDFG comments (November 1999), and continuing IDFG concerns. We excerpt below Attachment A of IDFG (2000) comments on the Draft A-Fish, because many of these issues carry into the Draft Biological Opinion (Draft BiOp) and All-H paper, released on July 27, 2000. Following the excerpt, we highlight the remaining issues relevant to the Draft BiOp and All-H paper:

The Idaho Department of Fish and Game (IDFG) reviewed and commented August 30, 1999, on the National Marine Fisheries Service (NMFS) draft report "An assessment of Lower Snake River Hydrosystem Alternatives on Survival and Recovery of Snake River Salmonids" (April 14, 1999). NMFS responded to some of the IDFG comments in a document (revised November 16 1999) posted on their website: [www.nwfsc.gov/cr/pdf\\_files/response.pdf](http://www.nwfsc.gov/cr/pdf_files/response.pdf)

The IDFG [8/30/99] comments and NMFS [11/16/99] responses are summarized in the table below. Our [April 29, 2000] comments on the NMFS responses are included as endnotes.

<b>IDFG Comments (8/30/99)</b>	<b>NMFS Response (11/16/99)</b>
<b>Procedural:</b>	
NMFS use of information was selective, excluding important elements of risk assessment.	
NMFS did not follow through on promise for PATH pre-review of draft document. NMFS autonomous approach on A-Fish and lack of technical review prior to release, left state and tribal fisheries agencies little choice but to peer review NMFS 'D' value document. Technical dispute could have been resolved if NMFS had been more inclusive.	NMFS is certainly NOT excluding input or feedback, and to the contrary is keen about soliciting reviews of its analysis. Prior to initial draft NMFS sought critiques from USFWS, BPA, BIA, EPA, USCOE. Maximum input was sought commensurate with keeping on schedule. Now second draft is complete in which reviews by ISAB, CRITFC, IDFG et al. used to improve final document. <sup>1</sup>

Technical dispute on 'D'-value analysis could have been resolved prior to release of draft A-Fish if NMFS had used inclusive approach.	
NMFS omitted PATH weight of evidence (WOE) process and Scientific Review Panel (SRP) report. WOE and SRP input generally reduced the utility of transportation and was not supportive of hypothesis that benefits of transport were being masked.	
General Comments:	
IDFG agreed with overall A-Fish conclusions about likelihood of different hydrosystem options to meet survival and recovery standards, and risk assessments relative to uncertainty.	
A-Fish then selected a narrow set of assumptions related to 'D' to conclude breach option may not be better than transport if this narrow set of assumptions is true and all others false.	
A-Fish uses this narrow assessment to derive justification to delay long-term recovery decisions to continue studying these assumptions, and infers that delay may not substantially increase risk.	It is unfortunate if this impression was created. Delaying actions while learning more is an "action" that warrants analysis and consideration. Discussing options does not equal endorsement. New A-Fish goes to great length to quantify extinction risks and to point out that risk of delay is substantial. <sup>ii</sup>
IDFG disagrees with NMFS narrow assessments for spring/summer chinook (not scientifically defensible), and points out that NMFS approach ignores risk to sockeye, fall chinook and steelhead.	
A-Fish fails to provide rationale or evidence that dams have been fixed, and that something else is masking adult returns (points 1-5, below).	
1. Undisputed that completion and initial operation of lower Snake River dams constituted a significant limiting factor for Snake River salmon and steelhead.	

2. NMFS largely ignored upstream v. downstream stock comparison from PATH that shows worse declines for Snake River stocks than for stocks above fewer dams.	NMFS agrees that A-Fish does not focus attention on upstream v. downstream comparisons. Reason is twofold. Comparisons do not point as clearly to hydrosystem as the “blame” There are too many other features changing along with development of dams (ISAB quote). Second reason is NMFS rejects “experimental design--there is no “control”. Stocks are in different ESUs, are genetically distinct, have different age compositions upon return and rear in ecologically different areas (Zabel and Williams manuscript). To show stock comparisons are not so unambiguous, look at upper Columbia stocks. Data show upper Columbia stocks did not decline until 1975 brood year, 2 generations after hydrosystem was complete. This suggests something else influenced these stocks after 1977. <sup>iii</sup>
3. The primary difference between upriver and downriver stocks are the effects of additional dams, since the groups have similar migration timing, age, exposure to estuary conditions and predators, there is no compelling evidence they go to different areas of the ocean or that a selective change in ocean distribution occurred coincident with dam construction.	
4. If transportation and other recovery actions compensated for effects of dams, should have seen a narrowing in gap of stock performance as improvements were implemented. This has not occurred. Only years where gap narrows is when flows (and spill) are high due to natural runoff.	
5. Assumptions that must be true to conclude smolt transportation and other fixes have compensated for dams: (a) little or no delayed mortality of transported and in-river smolts; (b) mortality is occurring below Bonneville Dam; (c) cause is selective for upriver stocks but not related to delayed effects of dams or smolt collection and transportation; (d) the cause of selective mortality appeared on scene at same time as dams but is unrelated to the dams.	
If NMFS is to conclude above assumptions are valid, A-Fish must show scientific rationale and justification; explain why PATH retrospective, WOE and SRP review findings were largely ignored.	

<b>Transport Effectiveness and ‘D’ Values:</b>	
IDFG disagrees with A-Fish conclusion that under some plausible sets of assumptions, breaching yields little improvement over transportation. Conclusion requires a <u>combination</u> of high ‘D’ and no delayed mortality of fish that migrated in-river. A-Fish actually showed evidence of delayed mortality as a function of number of times a smolt was collected (spring/summer chinook and steelhead, hatchery and wild origin).	
NMFS estimated value of ‘D’ = 0.8 is based on optimistic assumptions. More reasonable assumptions lead to ‘D’ = 0.4 (amended to 0.5 in Bouwes et al. 1999) based on same data. ‘D’ is not measurement, it a model value, sensitive to assumptions and data groupings.	Lengthy documents detail these concerns by IDFG and NMFS response. Resolving the two calculation methods will not be easy, both have technical merit, this is ongoing dialogue. NMFS finds distribution of ‘D’s less valuable than debating two alternative approaches. If one wants to focus on ‘D’ values, it would be most fruitful to attempt to select between the two alternative preferred methods. NMFS is moving to an analytical framework that downplays the ‘D’ value formulation of the problem. If discussion elevates ‘D’ values to such a high position, it distracts us from real question: if Snake River dams are breached, what is the likely improvement in survival? ‘D’ values represent one way of getting answer to the question, but not only way. Moreover, interpreting ‘D’ values, even if one agrees on the data and exactly how to calculate them is not clear. <sup>iv</sup>
IDFG disagrees with NMFS suggestion that further studies could reduce uncertainty about ‘D’ in clear and unambiguous manner in near term.	
Analyses indicate that, even if ‘D’ is high, natural river option most likely to recover fish when extra mortality (common to both transport and in-river smolts) is related to hydrosystem.	
SARs of transported smolts have rarely approached 2%, whereas 4% SAR is needed for recovery.	
Evidence of delayed mortality due to hydrosystem: crowding and collection are stressful for both bypassed and transported fish; A-Fish shows evidence of delayed mortality of bypassed smolts; turbine passage, delayed migration and increased bio-energetic demands likely to cause delayed mortality.	

NMFS assumed high 'D' in past and future. Evidence from PATH WOE shows high 'D' assumption does not fit data on spawners and recruits.	
Snake stocks performed only 1/3 as well as lower river stocks since the dams. This estimate ignores the additional mortality that Snake River adults accrue migrating upstream through hydrosystem.	
SAR of transported Snake River stocks during 1989-1995 averaged 0.29%, compared to 2.2% for Yakima stock (above 4 dams).	NMFS has not seen this analysis. One could compare Yakima SARs to other downriver stocks and obtain different conclusion. <sup>v</sup>
<b>Risk of Delaying the "1999 Decision"</b>	
A-Fish fails to provide a thorough risk assessment associated with delaying the long-term recovery decision. If NMFS desires to delay, the A-Fish must demonstrate that stock viability and stock structure will not be impaired by delay. Assessment should include sockeye, steelhead and fall chinook.	
Real risk is wide spread stock extinction considering small population size (as noted in A-Fish) and continued decreasing trend in escapements (ignored in A-Fish).	
Proposed study to determine true 'D' value would not determine whether transportation would perform nearly as well as natural river option, because 'D' values do not represent the entire scope of delayed mortality due to hydrosystem. Populations are at risk unless both D is high and there is no delayed mortality due to passage through the hydrosystem.	
<b>Excluding WOE and SRP Weights:</b>	
IDFG disagrees with NMFS decision and rationale to exclude SRP weights, and disregard WOE and NMFS statement that new data are becoming available which will allow us to reject alternative hypotheses via standard statistical methods as opposed to using expert panels. NMFS new 'D' analysis does not substantiate A-Fish assertion that new data have rendered the weightings obsolete. A-Fish was unbalanced in presenting alternative hypotheses about extra mortality. Cited only NMFS submission to WOE (Williams et al. 1998) and ignored counterpoints (Budy et al. 1998). Lack of balance in presenting selective regime shift hypothesis; should have presented WOE evidence and SRP weights.	NMFS stands by its decision to neglect SRP weight for original reasons given. NMFS does agree with IDFG that it needs to be careful about "selectively" citing one WOE report and not others. This is a fair criticism. Publication of analyses and results in scientific journals is a goal for how to identify which works to cite. <sup>vi</sup>
A-Fish should have presented WOE and SRP weights on alternative passage model results, which were driven by 'D'	

values. Low retrospective 'D' values fit spawner and recruit data better and received much higher SRP weights.	
<b>Spawning and Rearing Habitat:</b>	
A-Fish emphasis on potential recovery benefits in spawning and rearing habitat cannot be supported by PATH. Habitat declines do not account for post-dam declines in Snake River spring/summer chinook. Declines similar in wilderness areas and highly degraded streams. PATH analysis indicated relatively small benefits from habitat improvement, insufficient for recovery with continued transport options.	
A-Fish is unrealistic about which populations could benefit from habitat improvement. Wilderness populations have virtually no potential for improvement. Fall chinook are mainstem spawners, with limited opportunity. IDFG supports habitat protection & restoration, and stresses practical limitations.	NMFS disagrees. On-going analysis suggests habitat could make major contribution to recovery, even for Snake River fish, which have extensive high-quality habitat. IDFG conclusion is counter to ISAB, which criticized A-Fish for not paying enough attention to habitat. Moreover first year improvements could also be made with hatchery actions to minimize impacts on wild stocks. <sup>vii</sup>
<b>Summary:</b>	
A-Fish should clearly describe the assumptions that must be true to conclude that current operations have compensated for effects of Snake River dams, describe weight of evidence for and against, and theory for and against these assumptions.	
IDFG listed those assumptions, and stated that the weight of scientific evidence supporting this narrow set of assumptions is low, as evidenced in the PATH, and SRP WOE reports.	
If NMFS chooses to accentuate this narrow set of assumptions, it must shoulder the burden of proof to demonstrate why decision-makers should be optimistic about these assumptions. NMFS must also convey the consequences of falsely accepting this narrow set in alternative management actions.	
The importance of A-Fish to long-term recovery decisions accentuates need for objective risk assessment that is true to scientific process established and agreed to in the region. That is why a more collaborative approach to development of A-Fish should be embraced prior to inclusion in the Corps DEIS.	

<sup>i</sup>Seeking input from the other federal agencies did not constitute fulfillment of the promise to allow state and tribal review of the document through PATH. IDFG believes that NMFS process on the A-Fish continues to be less than collaborative with state and tribal fisheries agencies.

<sup>ii</sup>Risk is likely higher than NMFS CRI analyses suggest (see IDFG comments on All-H Paper about CRI analyses-IDFG 2000).

<sup>iii</sup>Note that NMFS' favored hypotheses about extra mortality being caused by some selective factor completely lack controls. In fact, the upstream and downstream stock groupings are closely related

and from common lineage, despite NMFS reservations about the differences in genetic background. NMFS' rejection of closely related stock groupings of stream-type chinook (which share a common estuary and early ocean) strongly contradicts CRI's decision to assume that estuary survival of Snake River stream-type chinook can be represented by literature values from coastal coho (which use a different estuary). NMFS conclusions about upper Columbia stock responses are flawed because they use the wrong metric. NMFS should have looked at the deviations from stock-recruitment patterns, which would have supported the original PATH retrospective conclusions about temporal and spatial patterns of stock decline. (see IDFG comments on All-H paper-IDFG 2000).

<sup>iv</sup>We agree with NMFS that the real question is the total survival improvement (how much can an option reduce the total direct and delayed mortality). We note also that NMFS was responsible for elevating 'D' in the first draft of the A-Fish. However, NMFS response on 'D' values is inconsistent with their decision to neglect the SRP weights. NMFS seems to now agree with the IDFG comments that 'D' is an ambiguous "measurement". The notion that new data were available to statistically reject some hypotheses was a key reason given for dropping WOE and SRP weights. NMFS response still supports dropping the weight of evidence and SRP weights, although it seems inconsistent with their response on 'D'. IDFG recommends that the full weight of evidence and SRP review needs to be included in the A-Fish.

<sup>v</sup>The Yakima SAR data were obtained from Yakima Indian Nation (B. Watson, pers. comm.). IDFG is in the process of documenting the sources used in the comparison. Results of Yakima/Snake SAR comparison are consistent with results of the PATH upriver/downriver stock comparisons.

<sup>vi</sup>See comment iv.

<sup>vii</sup>NMFS has not conducted any feasibility in their CRI analyses, from which their response is seemingly based. It seems far-fetched to conclude that improving high-quality habitats could make a major contribution to recovery, in the absence of any feasibility assessments. A similar problem exists with NMFS' supposition that hatchery improvements could improve first year survival when some of the index areas do not even have any hatchery fish (Petrosky and Cannamela, IDFG, 11/12/99 memo to Budy and Schaller, USFWS). The CRI analysis has also misallocated mortality across the life cycle, attributing too much mortality to the first year because of their optimistic assumptions about estuary survival (see IDFG comments on All-H paper—IDFG 2000).

### **Literature Cited (Attachment A)**

Bouwes, N., H. Schaller, P. Budy, C. Petrosky, R. Kiefer, P. Wilson, O. Langness, E. Weber, E. Tinus. 1999. An analysis of differential delayed mortality experienced by stream-type chinook salmon of the Snake River. A response by state, tribal, and USFWS technical staff to the 'D' analyses and discussion in the Anadromous Fish Appendix to the U.S. Army Corps of Engineer' Lower Snake River Juvenile Salmonid Migration Feasibility Study. October 4, 1999. Submitted to NMFS for ESA record.

Budy, P., C. Petrosky, P. Wilson, O.P. Langness and N. Bouwes. 1998. Hatchery "extra" mortality hypothesis. Response to Appendices 1&2 of the W.O.E., [August] 4, 1998. Submission 19 to the PATH Weight of Evidence Report. (Marmorek and Peters 1998) Appendices.

IDFG 2000. Technical comments on the scientific analysis used for the Federal Caucus Draft All-H Paper. March 17, 2000. Idaho Department of Fish and Game, Boise, Idaho.

Petrosky, C. and D. Cannemela. 1999. NMFS misinterpretation of predation estimates by steelhead smolts on chinook fry. IDFG Memorandum to P. Budy and H. Schaller, USFWS. November 12, 1999.

Williams, J.G., G. Matthews, J. Meyers, S.G. Smith, T. Cooney, and C. Toole. 1998. Hatchery “extra mortality” hypothesis. Submission 1 to the PATH Weight of Evidence Report. (Marmorek and Peters 1998) Appendices.

### **Lack of Resolution of Issues in Draft BiOp and All-H Paper (July 27, 2000)**

It appears that the Draft BiOp and All-H Paper (July 27, 2000) do not satisfactorily address most of the issues raised in IDFG (April 29, 2000) comments on the Draft A-Fish (excerpted above), particularly those relating to delayed mortality and weight of evidence. IDFG concludes that (numbers refer to endnotes in excerpt):

- i) the NMFS and Federal Caucus approach to completion of the Draft BiOp has not improved since our April 29, 2000 comments, and has continued to be less than collaborative for state and tribal salmon management agencies;
- ii) the risk to Snake River stocks continues to be underestimated in the Draft BiOp due to use of non-conservative extinction thresholds, modeling of absolute extinction, and failure to incorporate density dependence into the recovery modeling;
- iii) NMFS argument about “extra mortality” being caused by some non-hydropower factor that selects against Snake River stocks continues to have little empirical or theoretical support. The NMFS argument and that of the other salmon management agencies have since been published in the Canadian Journal of Fisheries and Aquatic Sciences 57(8) 39-46: see Zabel and Williams (2000) and Schaller et al. (2000). IDFG believes that the PATH retrospective analysis conclusions about temporal and spatial patterns of stock decline remain valid. CRI has also dropped the use of coastal coho smolt-to-adult return rate (SAR) estimates in calibrating the Leslie matrix model, and incorporated SAR estimates derived from PATH, similar to the suggestion of STUFA (2000);
- iv) the real question continues to be the total survival improvement from an action, or how much an option can reduce total direct and delayed mortality. IDFG does not understand and continues to disagree with NMFS’ reluctance to include the weight of evidence (WOE) information from PATH, or alternatively complete another formal weight of evidence incorporating any new information for the final BiOp. A key reason NMFS gave for dropping the WOE information was their claim in the preliminary Draft A-Fish (December 1999) that new data were available to statistically reject some hypotheses, yet they no longer make that assertion;
- v) still in progress;
- vi) see comment iv;



- vii) the problem of lack of feasibility for off-site mitigation remains a major flaw of the Draft BiOp and All-H Paper. As discussed elsewhere in IDFG comments and STUFA (2000) the numeric experiments conducted by CRI are irrelevant unless one attempts to separate the natural mortality from the discretionary mortality of an action. Feasible survival improvements from off-site habitat mitigation appear to be small to moderate for the Snake River spring/summer chinook index stocks. NMFS no longer assumes any quantitative improvements from hatchery actions. The problem of CRI's misallocation of mortality between adult-to-smolt and smolt-to-adult life stages appears to have been addressed in response to STUFA (2000) comments.

### **Literature Cited**

- Schaller, H.A., C.E. Petrosky, and O.P. Langness. 2000. Reply to Zabel and Williams "Comments on 'Contrasting patterns of productivity and survival rates for stream-type chinook (*Oncorhynchus tshawytscha*) populations of the Snake and Columbia Rivers' by Schaller et al. (1999)." *Can. J. Fish. Aquat. Sci.* 57(8): 32-46.
- STUFA (State, Tribal and U.S. Fisheries Agencies). 2000. A technical review of the National Marine Fisheries Services Leslie Matrix model of Snake River spring and summer chinook populations. April 28, 2000. Submitted to NMFS for the ESA Record.
- Zabel, R.W. and J.G. Williams. 2000. Comments on "Contrasting patterns of productivity and survival rates for stream-type chinook salmon (*Oncorhynchus tshawytscha*) populations of the Snake and Columbia rivers" by Schaller et al. (1999). *Can. J. Fish. Aquat. Sci.* 57(8): 39-41.